FIG. 1

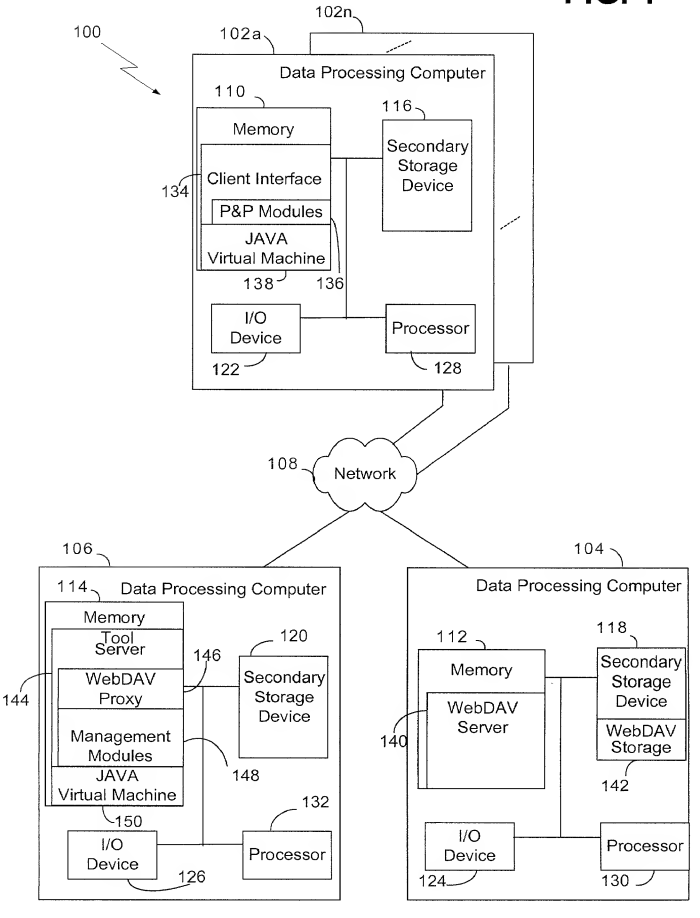
100
102n
102a
Data Processing Computer
110
Memory
116
Secondary Storage Device
134
Client Interface
P&P Modules
JAVA Virtual Machine
138
136
I/O Device
122
Processor
128
108
Network
106
114
Data Processing Computer
Memory
Tool Server
120
146
144
WebDAV Proxy
Secondary Storage Device
Management Modules
148
JAVA Virtual Machine
150
132
I/O Device
Processor
126
104
Data Processing Computer
112
118
Memory
Secondary Storage Device
WebDAV Server
140
WebDAV Storage
142
I/O Device
Processor
124
130

FIG. 2

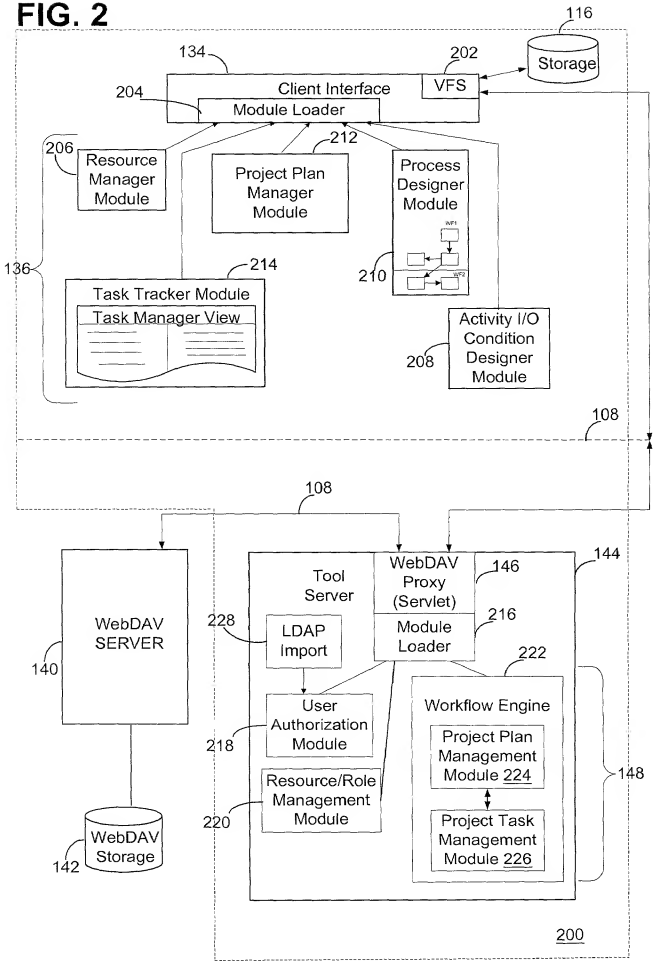
116
Storage
134
202
VFS
Client Interface
204
Module Loader
206
Resource Manager Module
212
Project Plan Manager Module
Process Designer Module
136
214
210
Task Tracker Module
Task Manager View
Activity I/O Condition Designer Module
208
108
108
WebDAV SERVER
140
Tool Server
WebDAV Proxy (Servlet)
146
144
228
LDAP Import
Module Loader
216
222
User Authorization Module
218
Workflow Engine
Project Plan Management Module 224
Resource/Role Management Module
220
Project Task Management Module 226
148
WebDAV Storage
142
200

FIG. 3

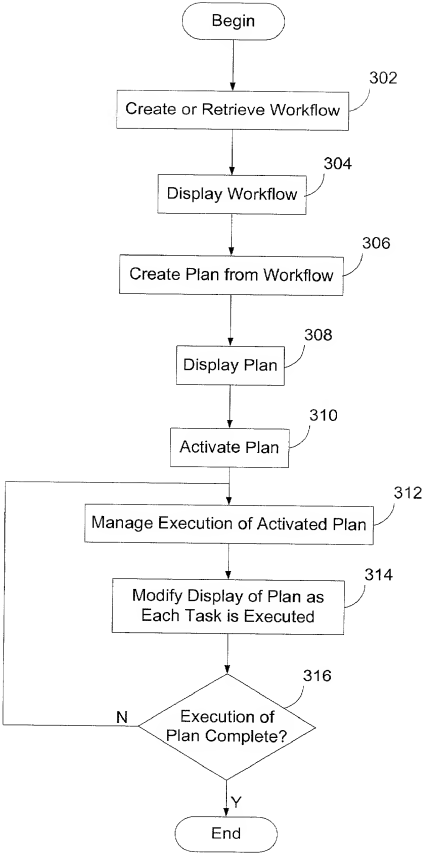
Begin
Create or Retrieve Workflow
302
Display Workflow
304
Create Plan from Workflow
306
Display Plan
308
Activate Plan
310
Manage Execution of Activated Plan
312
Modify Display of Plan as Each Task is Executed
314
Execution of Plan Complete?
316
N
Y
End

FIG. 4

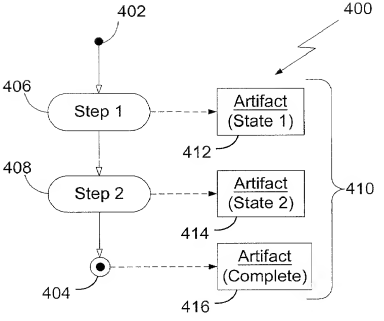
402
400
406
Step 1
Artifact
(State 1)
412
408
Step 2
Artifact
(State 2)
410
414
Artifact
(Complete)
404
416

FIG. 5

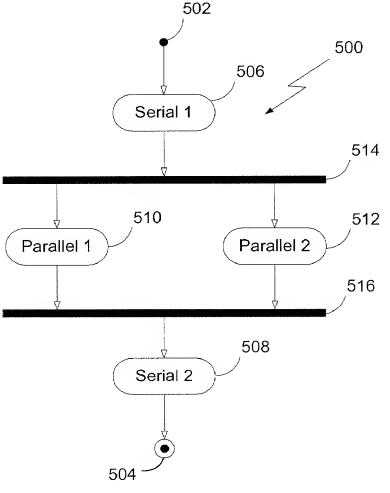
502
500
506
Serial 1
514
510
Parallel 1
Parallel 2
512
516
508
Serial 2
504

FIG. 6

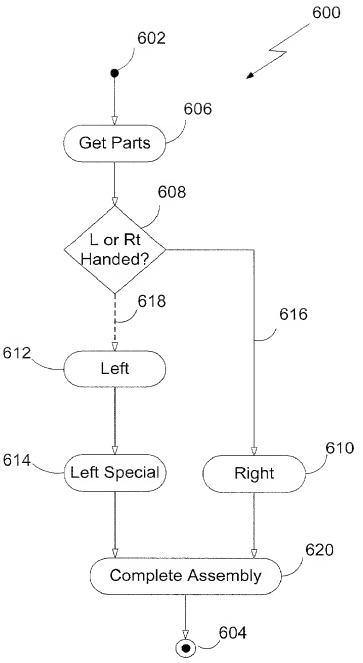
600
602
606
Get Parts
608
L or Rt Handed?
618
616
612
Left
614
Left Special
Right
610
620
Complete Assembly
604

FIG. 7

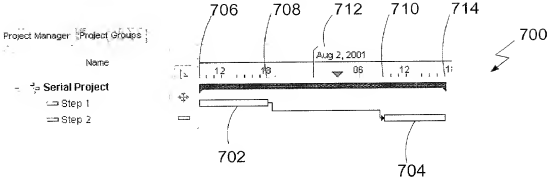

FIG. 8

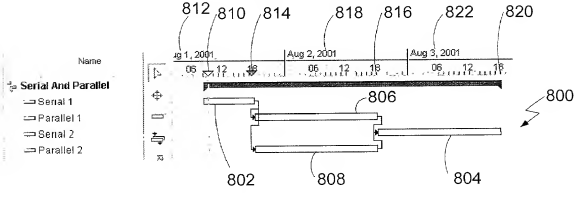

FIG. 9

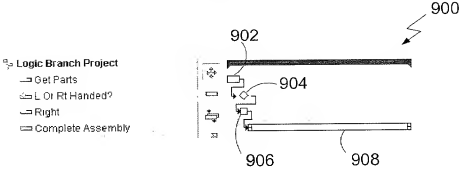

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FIG. 10

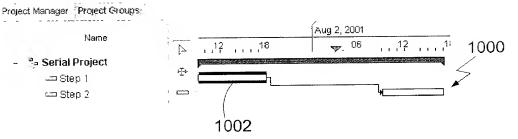

FIG. 11

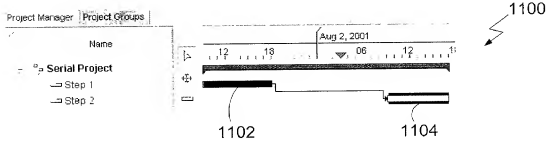

FIG. 12

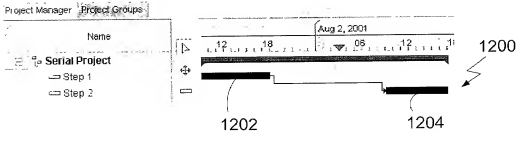

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FIG. 13

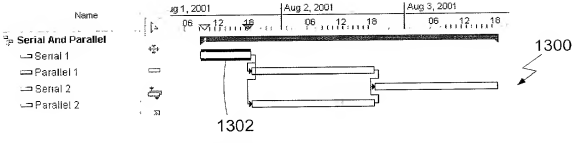

FIG. 14

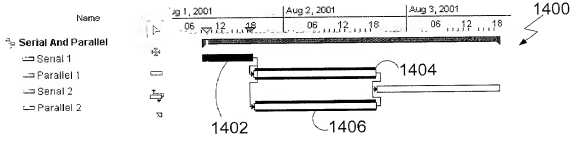

FIG. 15

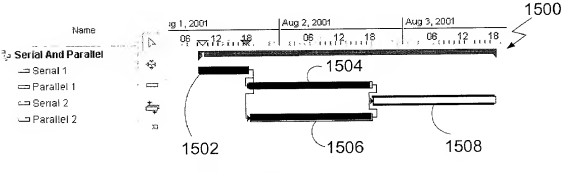

FIG. 16

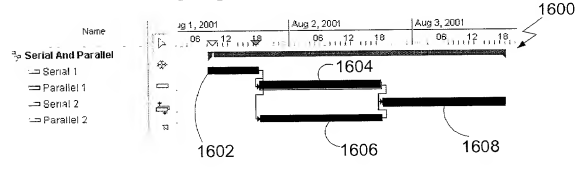

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FIG. 17

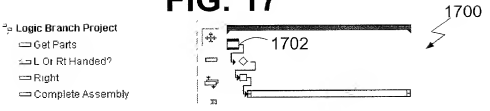

FIG. 18

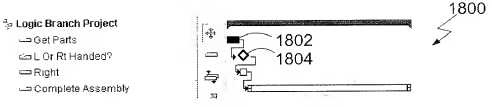

FIG. 19

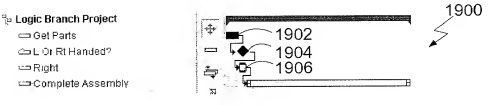

FIG. 20

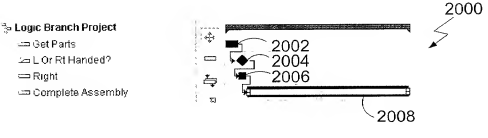

FIG. 21

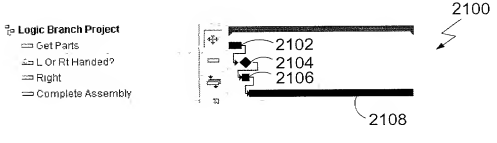

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FIG. 22

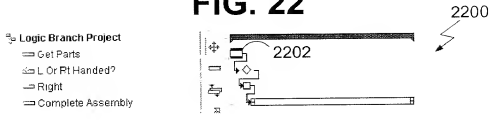

FIG. 23

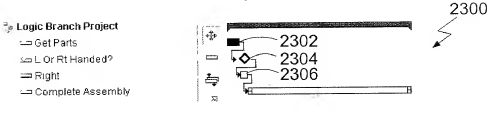

FIG. 24

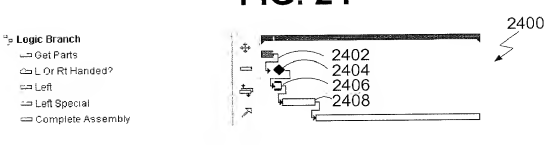

FIG. 25

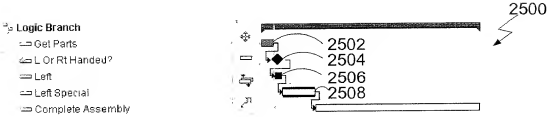

FIG. 26

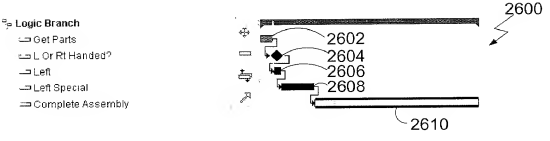

FIG. 27

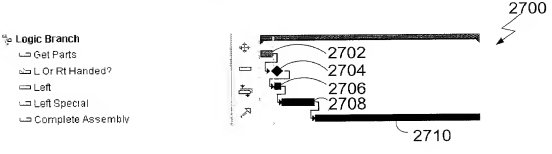

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FIG. 28A

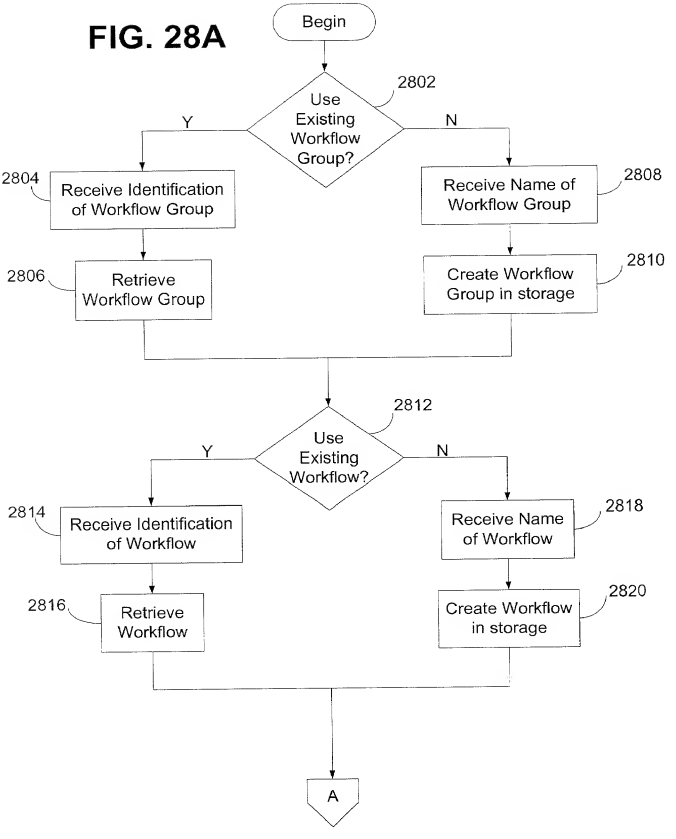

FIG. 28B

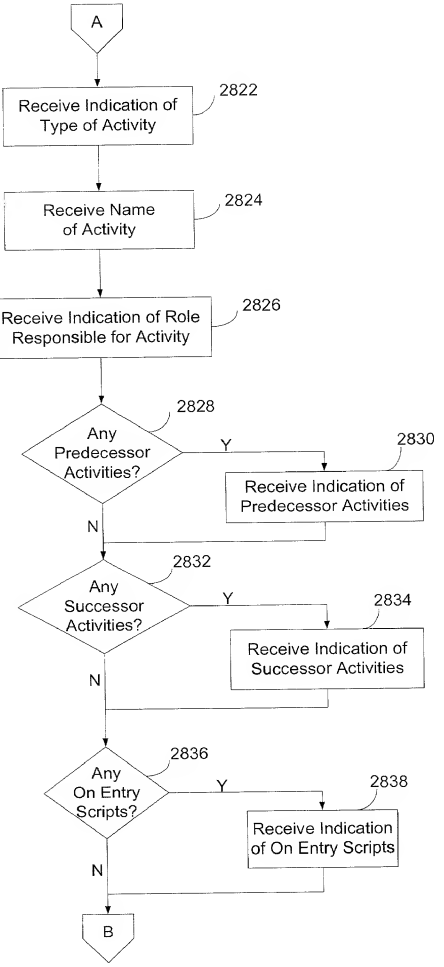

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FIG. 28C

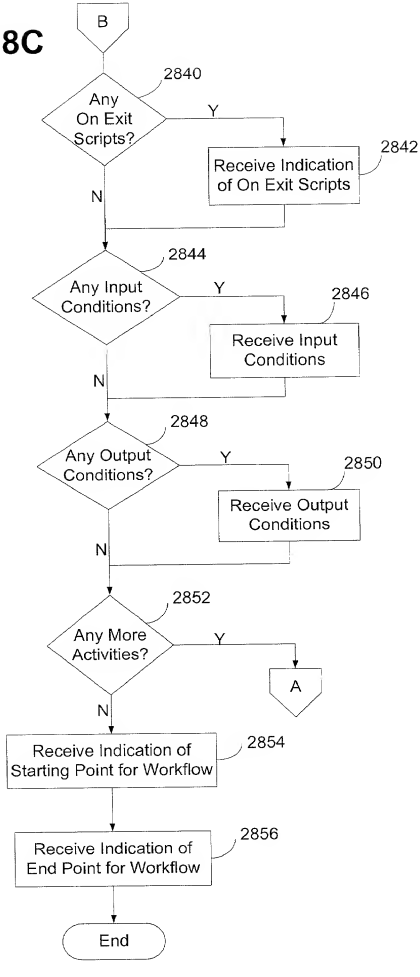

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FIG. 29

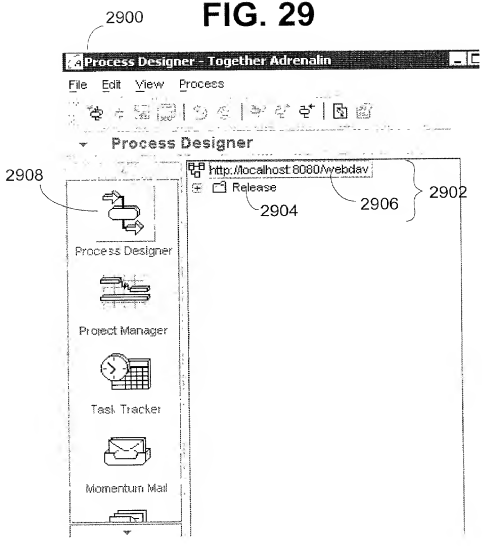

FIG. 30

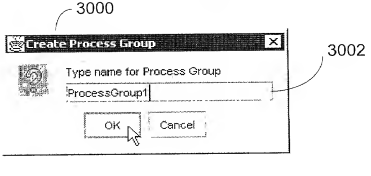

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FIG. 31

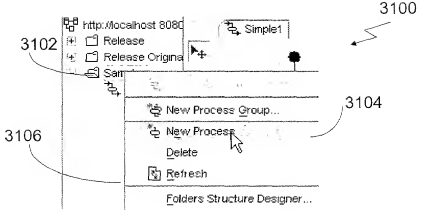


FIG. 32

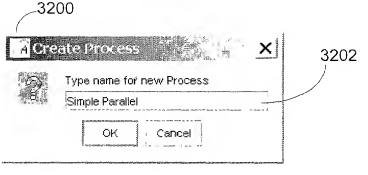
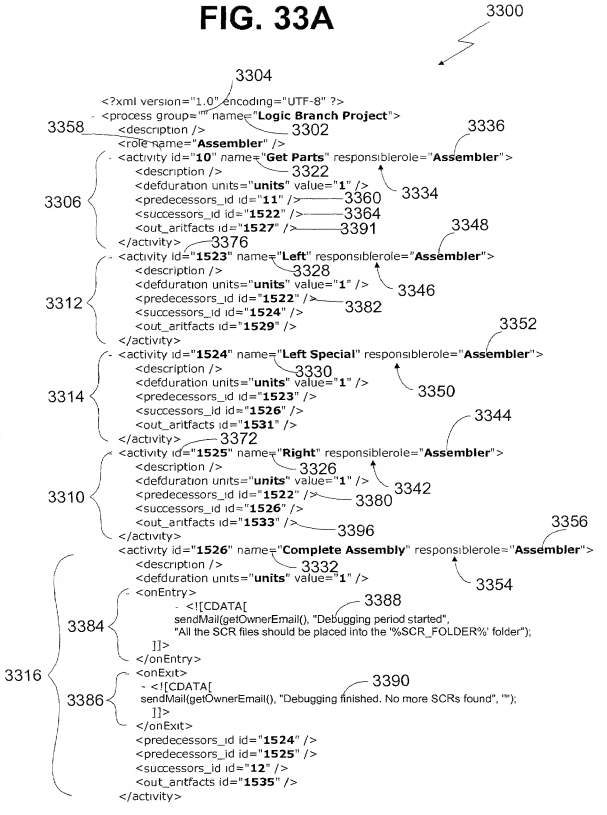


FIG. 33A



TOTAL-4594450

FIG. 33B

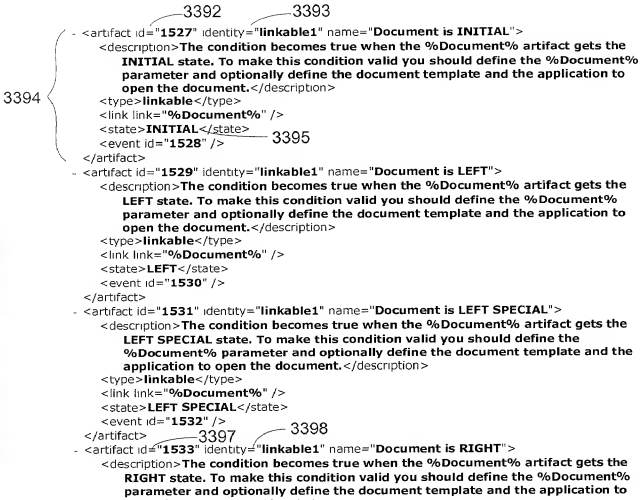


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FIG. 33C

Patent Application Publication

Patent Application Publication

FIG. 34

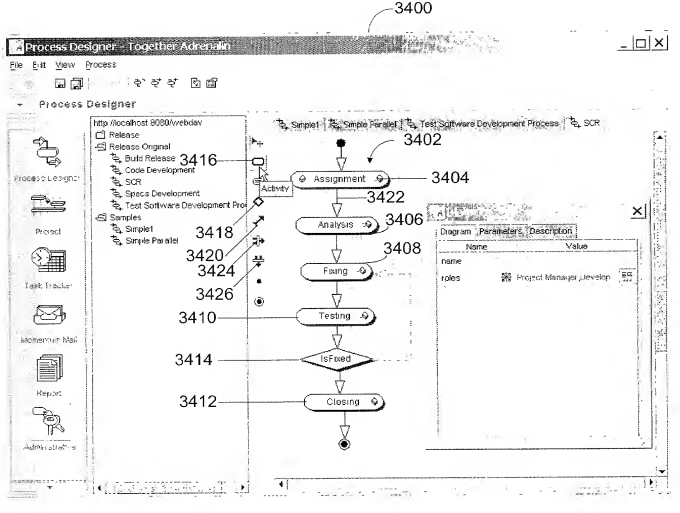


FIG. 35

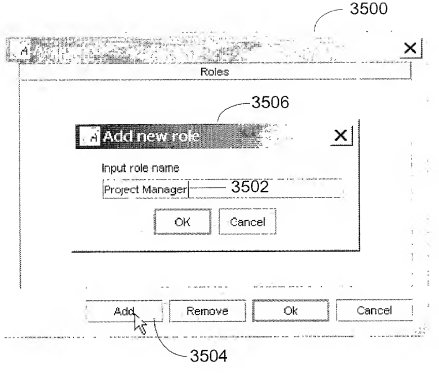

3500
Roles
3506
Add new role
Input role name
Project Manager
3502
OK
Cancel
Add
Remove
Ok
Cancel
3504

FIG. 36

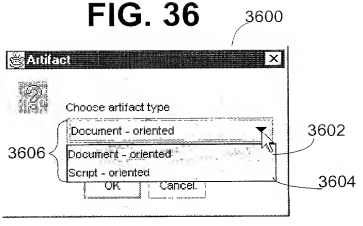

3600
Artifact
Choose artifact type
Document - oriented
Document - oriented
Script - oriented
OK
Cancel
3602
3606
3604

FIG. 37

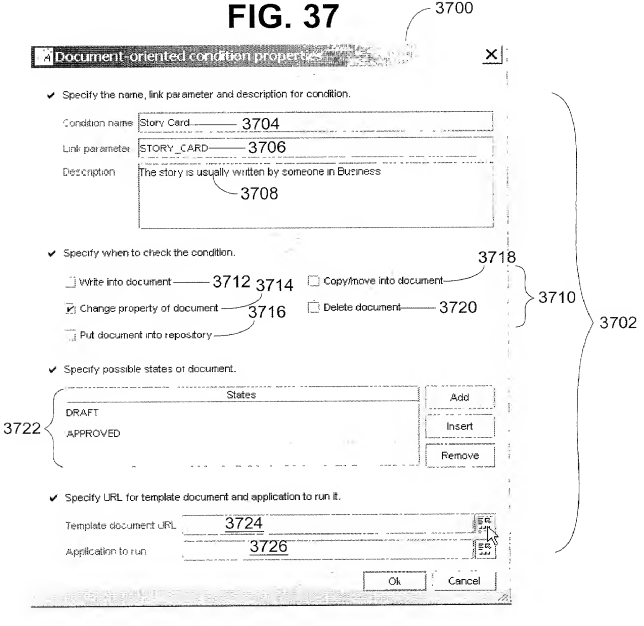

3700
Document-oriented condition properties
Specify the name, link parameter and description for condition.
Condition name
Story Card
3704
Link parameter
STORY_CARD
3706
Description
The story is usually written by someone in Business
3708
Specify when to check the condition.
Write into document
3712
3714
Change property of document
3716
Put document into repository
Copy/move into document
3718
Delete document
3720
3710
3702
Specify possible states of document.
States
DRAFT
APPROVED
3722
Add
Insert
Remove
Specify URL for template document and application to run it.
Template document URL
3724
Application to run
3726
Ok
Cancel

FIG. 38

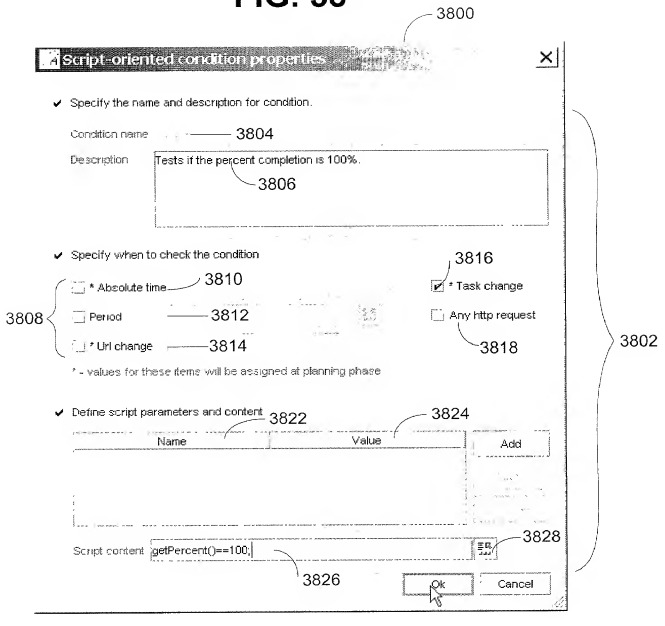

3800
Script-oriented condition properties
Specify the name and description for condition.
Condition name
3804
Description
Tests if the percent completion is 100%.
3806
Specify when to check the condition
3816
* Absolute time
3810
* Task change
3808
Period
3812
Any http request
* Url change
3814
3818
3802
* - values for these items will be assigned at planning phase
Define script parameters and content
3822
3824
Name
Value
Add
Script content
getPercent()==100;
3828
3826
Ok
Cancel

FIG. 39

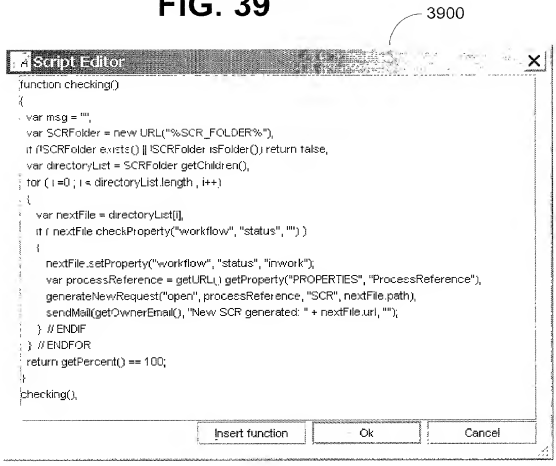

3900
Script Editor
function checking()
{
var msg = "";
var SCRFolder = new URL("%SCR_FOLDER%");
if (!SCRFolder.exists() || !SCRFolder.isFolder()) return false;
var directoryList = SCRFolder.getChildren();
for (i=0 ; i < directoryList.length ; i++)
{
var nextFile = directoryList[i];
if (nextFile.checkProperty("workflow", "status", ""))
{
nextFile.setProperty("workflow", "status", "inwork");
var processReference = getURL().getProperty("PROPERTIES", "ProcessReference");
generateNewRequest("open", processReference, "SCR", nextFile.path);
sendMail(getOwnerEmail(), "New SCR generated: " + nextFile.url, "");
} // ENDIF
} // ENDFOR
return getPercent() == 100;
}
checking();
Insert function
Ok
Cancel

FIG. 40

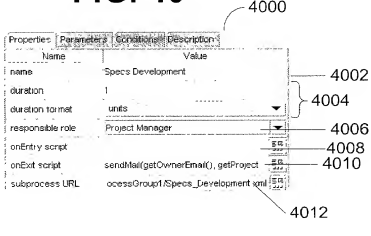

4000
Properties
Parameters
Conditions
Description
Name
Value
name
Specs Development
4002
duration
1
duration format
units
4004
responsible role
Project Manager
4006
onEntry script
4008
onExit script
sendMail(getOwnerEmail(), getProject
4010
subprocess URL
ocessGroup1/Specs_Development.xml
4012

FIG. 41A

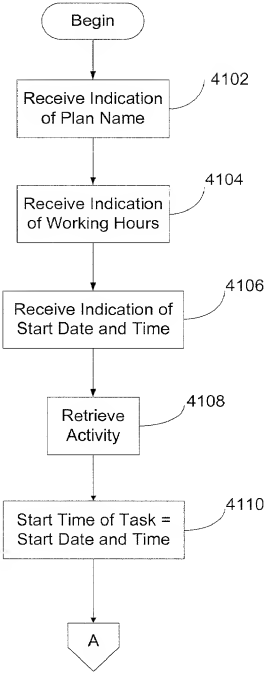
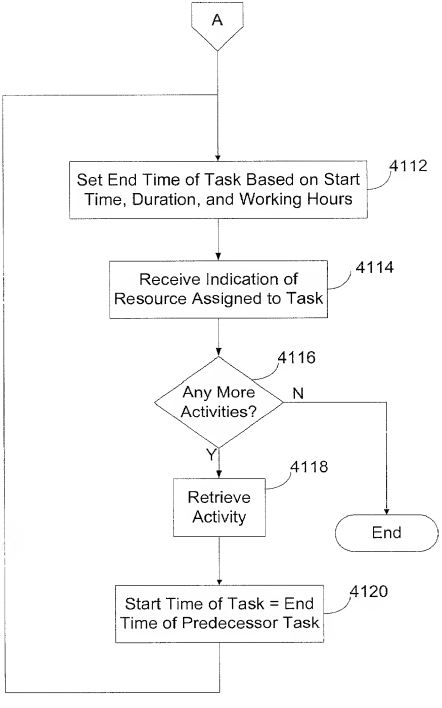

Begin
Receive Indication of Plan Name
4102
Receive Indication of Working Hours
4104
Receive Indication of Start Date and Time
4106
Retrieve Activity
4108
Start Time of Task = Start Date and Time
4110
A

FIG. 41B


A
Set End Time of Task Based on Start Time, Duration, and Working Hours
4112
Receive Indication of Resource Assigned to Task
4114
4116
Any More Activities?
N
Y
4118
Retrieve Activity
End
Start Time of Task = End Time of Predecessor Task
4120

TOP SECRET//SI//NOFORN

FIG. 42

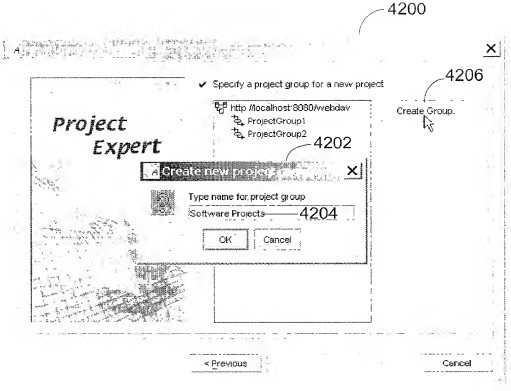


FIG. 43

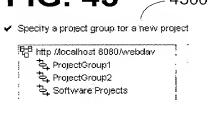


FIG. 44

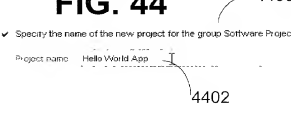


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FIG. 45

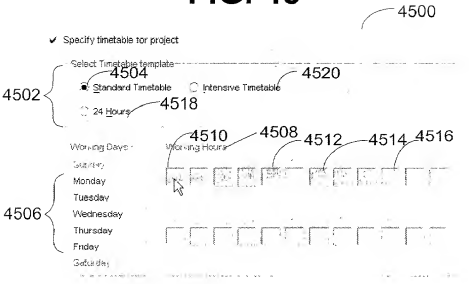

FIG. 46

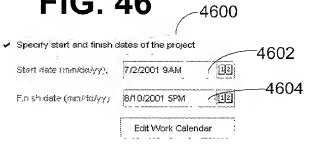

FIG. 47

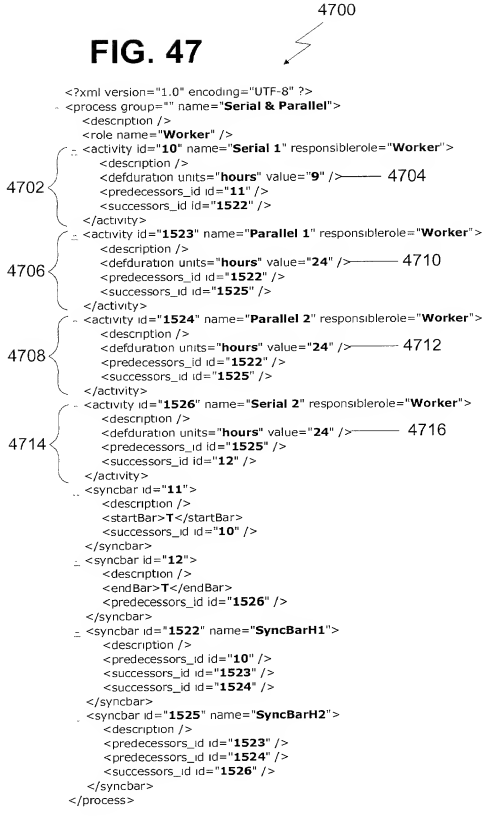
4700
<?xml version="1.0" encoding="UTF-8" ?>
<process group="" name="Serial & Parallel">
<description />
<role name="Worker" />
<activity id="10" name="Serial 1" responsiblerole="Worker">
<description />
<defduration units="hours" value="9" />
<predecessors_id id="11" />
<successors_id id="1522" />
</activity>
<activity id="1523" name="Parallel 1" responsiblerole="Worker">
<description />
<defduration units="hours" value="24" />
<predecessors_id id="1522" />
<successors_id id="1525" />
</activity>
<activity id="1524" name="Parallel 2" responsiblerole="Worker">
<description />
<defduration units="hours" value="24" />
<predecessors_id id="1522" />
<successors_id id="1525" />
</activity>
<activity id="1526" name="Serial 2" responsiblerole="Worker">
<description />
<defduration units="hours" value="24" />
<predecessors_id id="1525" />
<successors_id id="12" />
</activity>
<syncbar id="11">
<description />
<startBar>T</startBar>
<successors_id id="10" />
</syncbar>
<syncbar id="12">
<description />
<endBar>T</endBar>
<predecessors_id id="1526" />
</syncbar>
<syncbar id="1522" name="SyncBarH1">
<description />
<predecessors_id id="10" />
<successors_id id="1523" />
<successors_id id="1524" />
</syncbar>
<syncbar id="1525" name="SyncBarH2">
<description />
<predecessors_id id="1523" />
<predecessors_id id="1524" />
<successors_id id="1526" />
</syncbar>
</process>
4702
4704
4706
4710
4708
4712
4714
4716

FIG. 48

4800

```
<?xml version="1.0" encoding="UTF-8" ?>
<A:plan name="Serial_And_Parallel" userid="JK" xmlns:A="workflow">
  - <A:description>
      - <![CDATA[
      No Description
      ]]>
    </A:description>
  - <A:task activityID="10" caption="Serial 1"
        link="Sample_Project_Plans/Serial_And_Parallel/Task_2.xml" name="Task_2"
        owner="Worker"
        processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
        type="general" userid="JK">
        <A:start>2001 8 1 9</A:start>                    4804
4802    <A:finish>2001 8 1 18</A:finish>                 4806
        <A:supertask name="Task_1" />
        <A:user>JK</A:user>
        <A:successor name="Task_3" />
        <A:successor name="Task_4" />
    </A:task>
  - <A:task activityID="1523" caption="Parallel 1"
        link="Sample_Project_Plans/Serial_And_Parallel/Task_3.xml" name="Task_3"
        owner="Worker"
        processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
        type="general" userid="JK">
        <A:start>2001 8 1 18</A:start>                   4812
4808    <A:finish>2001 8 2 18</A:finish>                 4816
        <A:supertask name="Task_1" />
        <A:user>JK</A:user>
        <A:predecessor name="Task_2" />
        <A:successor name="Task_5" />
    </A:task>
  - <A:task activityID="1524" caption="Parallel 2"
        link="Sample_Project_Plans/Serial_And_Parallel/Task_4.xml" name="Task_4"
        owner="Worker"
        processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
        type="general" userid="JK">
        <A:start>2001 8 1 18</A:start>                   4814
4810    <A:finish>2001 8 2 18</A:finish>                 4818
        <A:supertask name="Task_1" />
        <A:user>JK</A:user>
        <A:predecessor name="Task_2" />
        <A:successor name="Task_5" />
    </A:task>
  - <A:task activityID="1526" caption="Serial 2"
        link="Sample_Project_Plans/Serial_And_Parallel/Task_5.xml" name="Task_5"
        owner="Worker"
        processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
        type="general" userid="JK">
        <A:start>2001 8 2 18</A:start>                   4822
4820    <A:finish>2001 8 3 18</A:finish>                 4824
        <A:supertask name="Task_1" />
        <A:user>JK</A:user>
        <A:predecessor name="Task_3" />
        <A:predecessor name="Task_4" />
    </A:task>
  - <A:task activityID="NONE" caption="Serial And Parallel"
        link="Sample_Project_Plans/Serial_And_Parallel/Task_1.xml" name="Task_1"
        processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
        type="general" userid="JK">
        <A:start>2001 8 1 8</A:start>
        <A:finish>2001 8 3 18</A:finish>
        <A:user>JK</A:user>
        <A:subtask name="Task_2" />
```

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FIG. 49

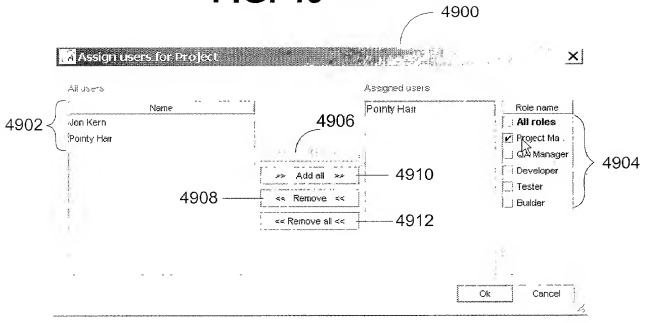


FIG. 50

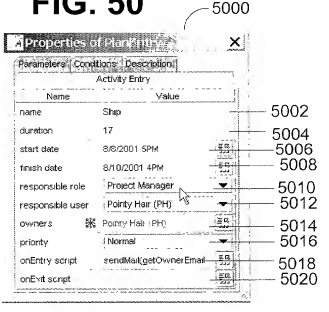


FIG. 51

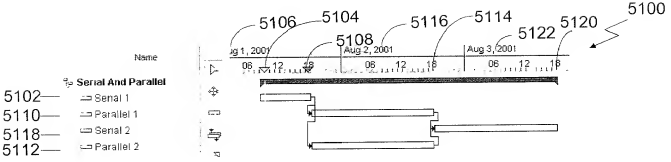

5100
5102
5104
5106
5108
5110
5112
5114
5116
5118
5120
5122
Name
Serial And Parallel
Serial 1
Parallel 1
Serial 2
Parallel 2
Aug 1, 2001
Aug 2, 2001
Aug 3, 2001
06
12
18

FIG. 52

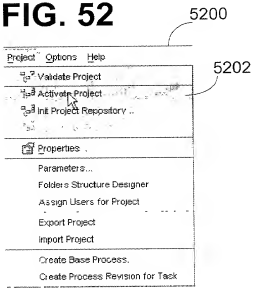
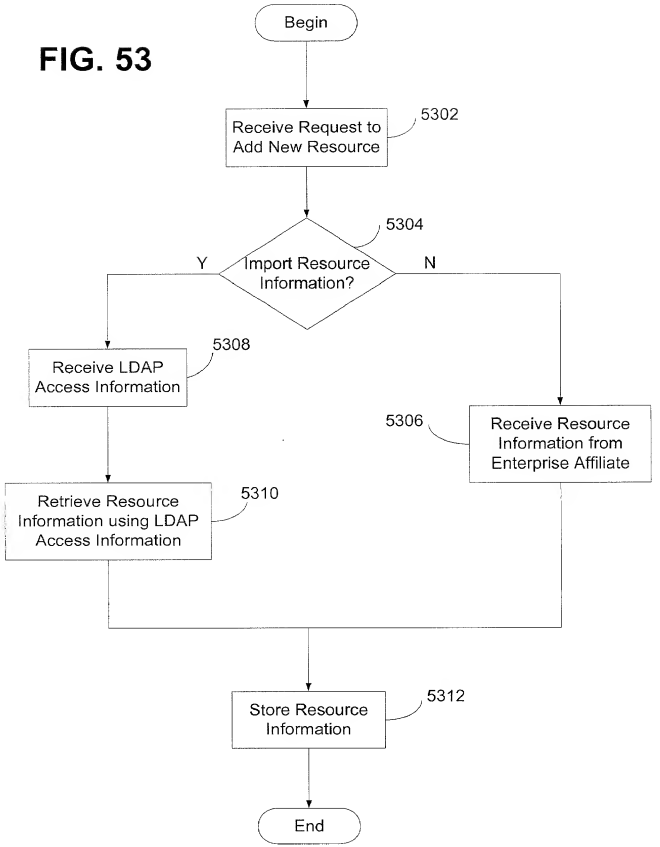

5200
5202
Project
Options
Help
Validate Project
Activate Project
Init Project Repository ..
Properties ..
Parameters...
Folders Structure Designer
Assign Users for Project
Export Project
Import Project
Create Base Process..
Create Process Revision for Task

FIG. 53


Begin
Receive Request to Add New Resource
5302
Import Resource Information?
5304
Y
N
Receive LDAP Access Information
5308
Receive Resource Information from Enterprise Affiliate
5306
Retrieve Resource Information using LDAP Access Information
5310
Store Resource Information
5312
End

TOYE80-169+1560

FIG. 54

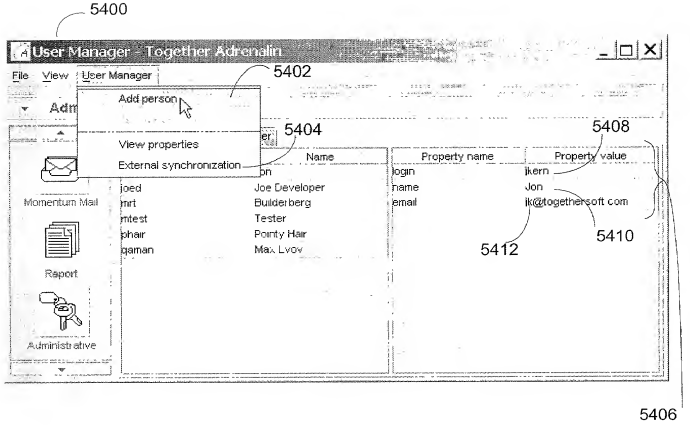


FIG. 55

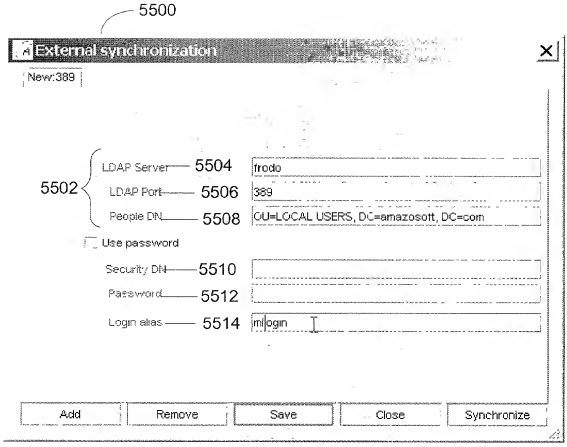

5500
External synchronization
New:389
5502
LDAP Server
5504
frodo
LDAP Port
5506
389
People DN
5508
OU=LOCAL USERS, DC=amazosoft, DC=com
Use password
Security DN
5510
Password
5512
Login alias
5514
mlogin
Add
Remove
Save
Close
Synchronize

FIG. 56

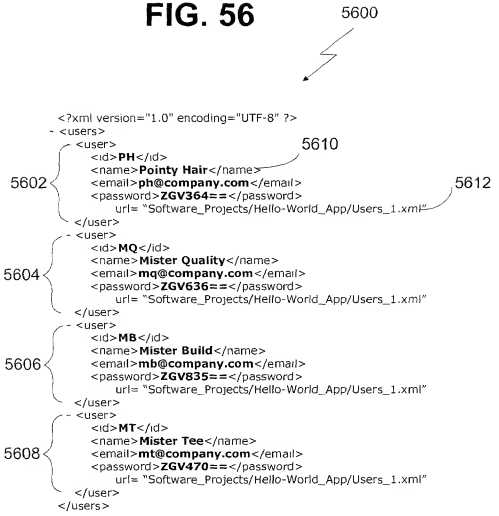

5600
<?xml version="1.0" encoding="UTF-8" ?>
- <users>
5610
<user>
<id>PH</id>
<name>Pointy Hair</name>
5602
<email>ph@company.com</email>
5612
<password>ZGV364==</password>
url= "Software_Projects/Hello-World_App/Users_1.xml"
</user>
- <user>
<id>MQ</id>
<name>Mister Quality</name>
5604
<email>mq@company.com</email>
<password>ZGV636==</password>
url= "Software_Projects/Hello-World_App/Users_1.xml"
</user>
- <user>
<id>MB</id>
<name>Mister Build</name>
5606
<email>mb@company.com</email>
<password>ZGV835==</password>
url= "Software_Projects/Hello-World_App/Users_1.xml"
</user>
- <user>
<id>MT</id>
<name>Mister Tee</name>
5608
<email>mt@company.com</email>
<password>ZGV470==</password>
url= "Software_Projects/Hello-World_App/Users_1.xml"
</user>
</users>

FIG. 57A

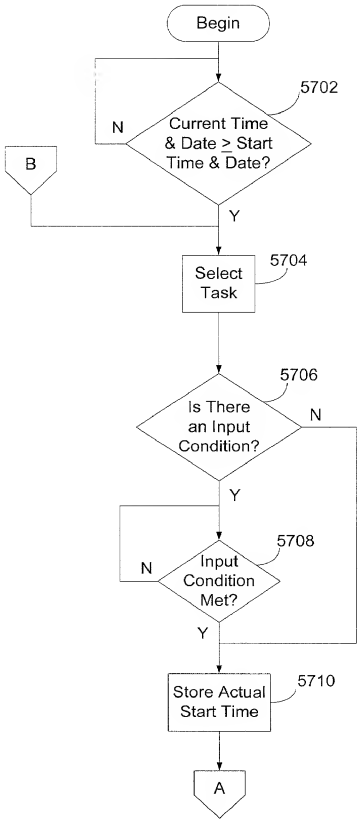

Begin
5702
Current Time & Date ≥ Start Time & Date?
N
Y
B
5704
Select Task
5706
Is There an Input Condition?
N
Y
5708
Input Condition Met?
N
Y
5710
Store Actual Start Time
A

FIG. 57B

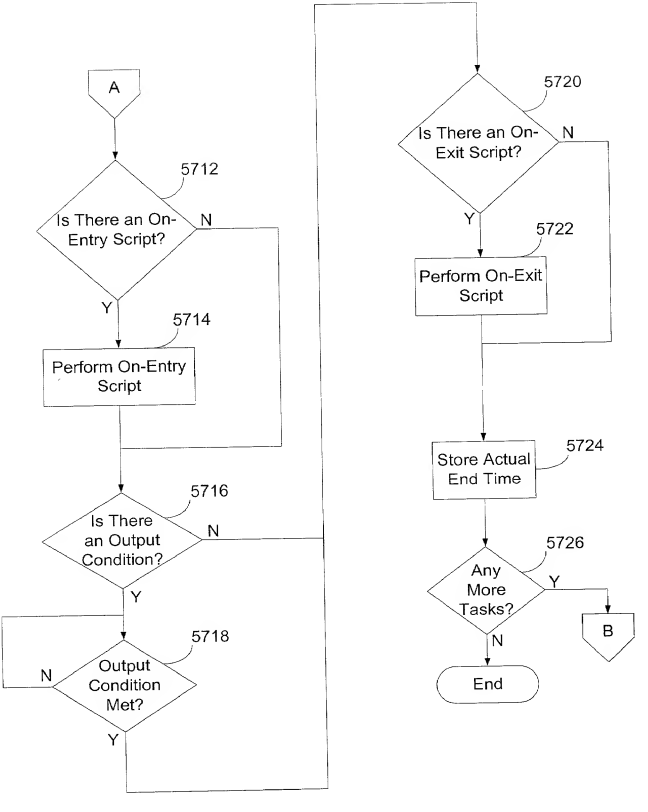

A
5712
Is There an On-Entry Script?
N
Y
5714
Perform On-Entry Script
5716
Is There an Output Condition?
N
Y
5718
Output Condition Met?
N
Y
5720
Is There an On-Exit Script?
N
Y
5722
Perform On-Exit Script
5724
Store Actual End Time
5726
Any More Tasks?
Y
B
N
End

FIG. 58

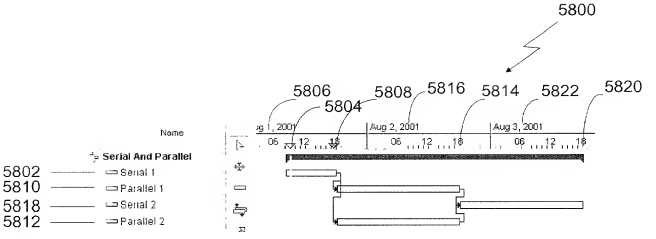

5800
5806
5808
5816
5814
5822
5820
5804
Name
Serial And Parallel
5802
Serial 1
5810
Parallel 1
5818
Serial 2
5812
Parallel 2
Aug 2, 2001
Aug 3, 2001
06
12
18

FIG. 59

5900

```
<?xml version="1.0" encoding="UTF-8" ?>
- <A:plan name="Serial_And_Parallel" userid="JK" xmlns:A="workflow">
  - <A:description>
    - <![CDATA[
      No Description
      ]]>
    </A:description>
  - <A:task activityID="10" caption="Serial 1"
      link="Sample_Project_Plans/Serial_And_Parallel/Task_2.xml" name="Task_2"
      owner="Worker"
      processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
      type="general" userid="JK">
      <A:start>2001 8 1 8</A:start>
      <A:finish>2001 8 1 18</A:finish>
      <A:supertask name="Task_1" />
      <A:user>JK</A:user>
      <A:successor name="Task_3" />
      <A:successor name="Task_4" />
    </A:task>
  - <A:task activityID="1523" caption="Parallel 1"
      link="Sample_Project_Plans/Serial_And_Parallel/Task_3.xml" name="Task_3"
      owner="Worker"
      processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
      type="general" userid="JK">
      <A:start>2001 8 1 18</A:start>
      <A:finish>2001 8 2 18</A:finish>
      <A:supertask name="Task_1" />
      <A:user>JK</A:user>
      <A:predecessor name="Task_2" />
      <A:successor name="Task_5" />
    </A:task>
  - <A:task activityID="1524" caption="Parallel 2"
      link="Sample_Project_Plans/Serial_And_Parallel/Task_4.xml" name="Task_4"
      owner="Worker"
      processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
      type="general" userid="JK">
      <A:start>2001 8 1 18</A:start>
      <A:finish>2001 8 2 18</A:finish>
      <A:supertask name="Task_1" />
      <A:user>JK</A:user>
      <A:predecessor name="Task_2" />
      <A:successor name="Task_5" />
    </A:task>
  - <A:task activityID="1526" caption="Serial 2"
      link="Sample_Project_Plans/Serial_And_Parallel/Task_5.xml" name="Task_5"
      owner="Worker"
      processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
      type="general" userid="JK">
      <A:start>2001 8 2 18</A:start>
      <A:finish>2001 8 3 18</A:finish>
      <A:supertask name="Task_1" />
      <A:user>JK</A:user>
      <A:predecessor name="Task_3" />
      <A:predecessor name="Task_4" />
    </A:task>
  - <A:task activityID="NONE" caption="Serial And Parallel"
      link="Sample_Project_Plans/Serial_And_Parallel/Task_1.xml" name="Task_1"
      processURL="http://localhost:8080/webdav/ProcessGroup2/Process1.xml"
      type="general" userid="JK">
      <A:start>2001 8 1 8</A:start>
      <A:finish>2001 8 3 18</A:finish>
      <A:user>JK</A:user>
      <A:subtask name="Task_2" />
```

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FIG. 60

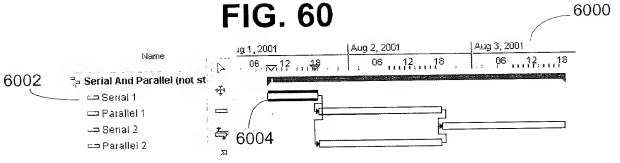


FIG. 61

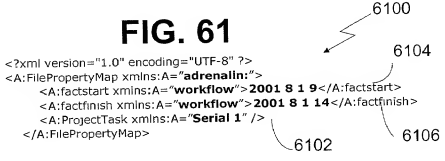


FIG. 62

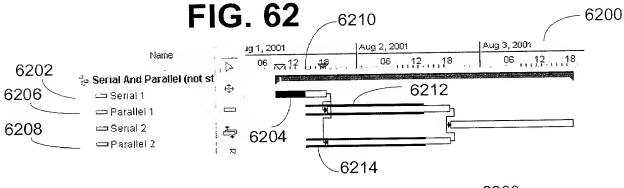


FIG. 63

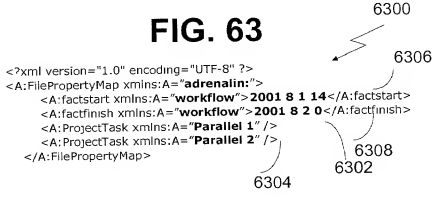
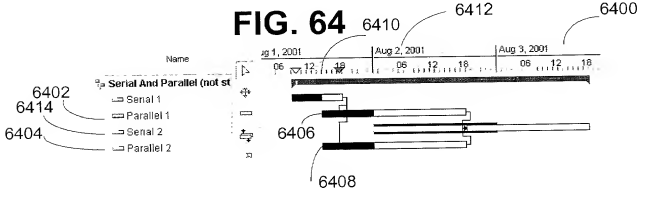


FIG. 64



TOP SECRET//HCS//NOFORN

FIG. 65

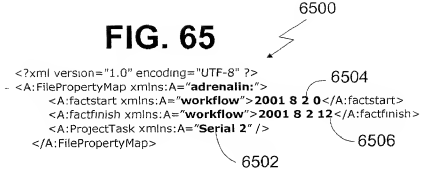
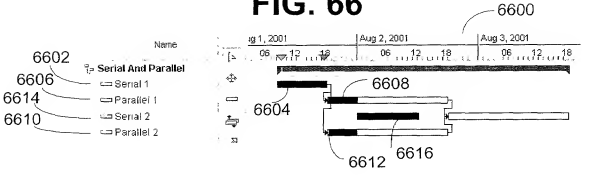



FIG. 66